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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/269,321	09/13/1999	WILLIAM KAELIN JR.	46793	9798

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EXAMINER
SANDALS, WILLIAM O

ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 02/27/2002

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/269,321	Applicant(s) Fine et al.
	Examiner William Sandals	Art Unit 1636

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Nov 9, 2001*.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *15-27* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *15-27* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Response to Arguments

1. In view of the Appeal Brief filed in Paper No. 15 on November 9, 2001, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(a) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(b) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2. Applicant's arguments with respect to claims 15-27 have been considered but are moot in view of the new ground(s) of rejection. A response to certain arguments is included where they may apply to the new grounds for rejection.

3. Amendments to the specification and arguments presented in Paper No.15 have overcome the rejection of the claims under 35 USC 112, second paragraph in the previous office action, and the rejection is withdrawn.

4. Arguments presented in Paper No.15 have overcome the rejection of claim 25 under 35 USC 112, first paragraph, new matter, in the previous office action, and the rejection is withdrawn.

5. Arguments presented in Paper No. 15 regarding the rejection of claims 15-27 under 35 USC 112, first paragraph, scope of enablement have been considered but are not convincing. The rejection is repeated below along with a response to the arguments.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 15-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for cells *in vitro*, does not reasonably provide enablement for cells in an animal, *in vivo*. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The specification contains references to methods of gene therapy, and the claims are drawn to a method of selectively targeting a malignant cell. While applicants have shown examples of targeting a malignant cell *in vitro*, they have not demonstrated any method of targeting a malignant cell *in vivo*. In order to do so, undue experimentation is required. Whether

undue experimentation is needed is not based on a single factor, but rather a conclusion reached by weighing many factors. Many of these factors have been summarized in *In re Wands*, 858 F.2d 731, USPQ2d 1400 (Fed. Cir. 1988).

The Wands factors as they apply to the instant claimed invention are as follows:

a- The quantity of experimentation necessary to reduce the instant claimed invention to practice would involve developing a gene therapy method.

b- Examples have been provided which show the introduction of a vector into normal rat brain tissue, and some *in vitro* examples of the method. However, no examples of gene therapy have been demonstrated, and the application provides only limited, prophetic teachings on the method of targeting a malignant cell *in vivo*.

d- The nature of the invention is complex. Gene therapy is a new and developing art as recited in Marshall in the section titled "The trouble with vectors", and at page 1054, column 3, and at page 1055, column 3. The problems of gene delivery, gene targeting to reach the intended host cell, and then to reach the intracellular target are not yet solved, as taught in Verma et al. (see especially page 239, column 3, the box titled "What makes an ideal vector?" and page 242).

d- The prior art taught by Orkin et al. (see especially the section on "Gene transfer and expression" and "Gene therapy in man status of the field") described many problems in the developing field of gene therapy. Recited problems include: lack of efficacy, adverse short term effects and limited clinical experience, the inability to extrapolate experimental results and unreliability of animal models. Problems with the vector include: host immune response to the

vector and the expressed product, difficulty of targeting the vector to the desired site, transient expression of the gene of interest and low efficiency of delivery of the vector to the targeted site.

f- The state of the art as taught by Verma et al., which states "the problems - such as the lack of efficient delivery systems, lack of sustained expression, and host immune reactions - remain formidable problems" and Anderson, W. F. (see page 25, top of column 1), which states "[e]xcept for anecdotal reports of individual patients being helped, there is still no conclusive evidence that a gene-therapy protocol has been successful in the treatment of human disease".

g- The examples presented in the instant specification demonstrate a lack of predictability. Three ***in vivo*** examples are given at pages 26-36 showing the effect of the E2F promoter to selectively express a gene in a malignant cell. The first and second examples use a ß-Gal gene linked to an E2F responsive promoter, demonstrating that the E2F responsive promoter was highly active in a Glioma as compared to normal brain tissue. However, the third example uses an E2F responsive promoter linked to a thymidine kinase gene where there was no identifiable distinction between the action of the E2F promoter in normal tissue as compared to activity in a glioma. These disparate results demonstrate the unpredictability of the promoter when it is linked to **ANY** (emphasis added) gene.

h- Given the state of the art above, the prior art cannot be relied upon for teachings on how to practice gene therapy, and the instant specification lacks the necessary details for predictable practice of the invention. Therefore, given the analysis above, it must be considered that the

skilled artisan would have needed to have practiced considerable non-routine, trial and error experimentation to enable the full scope of the claims.

Response to Arguments

8. Arguments set forth in Paper No. 11 assert that "if claims are enabled for one use, no further inquiry is needed". To the contrary, a claim must be enabled for its intended use.

9. Arguments set forth in Paper No. 11 assert that the references used in the above rejection discuss **"clinical efficacy"**, not enablement. The arguments set forth above demonstrate that gene therapy is not enabled, especially as shown in the quote from Anderson.

10. Arguments set forth in Paper No. 11 assert that the *in vitro* and *in vivo* examples taught in the instant specification demonstrate enablement. The instant examples do not show a method of treatment, but teach that certain aspects of the invention such as "activity of a transfected gene in cells", which has already been stated in the above scope of enablement rejection is enabled. As such, the examples do not overcome the instant rejection.

11. No response has been given to other arguments in Paper No. 11 which do not address claims limitations or rejections.

12. Arguments set forth in Paper No. 15 assert that the specification provides support for the enablement of the claimed invention because the three examples cited in the rejection above demonstrate the enablement of the invention in *in vivo* experiments. As noted above, the three examples at pages 2-36 of the instant invention demonstrate a lack of predictability of the E2F responsive promoter when expressing a gene in a malignant cell. Further, arguments regarding

the use of a cytotoxic gene are not found convincing, since the example using a cytotoxic gene (thymidine kinase) did not work. A presentation of results demonstrating the selective use of the E2F promoter in normal versus tumor tissue with another gene may provide convincing evidence of predictability.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

14. Claims 15, 16, 19-23 and 25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pat No. 5,885,833.

US Pat No. 5,885,833 taught (see especially the abstract, the summary, and columns 5-8 and 11-21) a method of selectively expressing a gene in a malignant cell of a tumor with an adeno-associated viral vector or a plasmid which comprised an E2F responsive promoter element (an activator sequence, such as DHFR, BMyb, cMyc or E2F) which controls expression of a structural gene (a positive or negative potentiator) which may be a TK gene, a cytotoxin (a suicide gene) (see column 12) or a cytokine.

Response to Arguments

15. Arguments set forth in Paper No. 11 assert that the "selective" targeting and expressing of the instant claimed E2F promoter is not anticipated by US Pat No. 5,885,833. On the contrary, the E2F promoter of US Pat No. 5,885,833 inherently contains all of the properties of the instant claimed E2F promoter.

16. Arguments set forth in Paper No. 15 assert that US 5,885,833 does not teach the selective expression in malignant cells over normally dividing cells. The claims do not set forth this limitation, therefore the argument is moot. Further, no evidence has been provided to demonstrate that the non-tumor cells were in fact dividing, nor that the instant claimed E2F responsive promoter was not active in normally dividing cells.

17. It is argued in Paper No. 15 that there is no inherency because the limitations of claim 25 step "a)" were not set forth in US 5,885,833. US 5,885,833 taught the evaluation of the presence of E2F promoter activity in normal and malignant cells in columns 1-2 and 5. Further, the mechanism of activation of an E2F responsive promoter is discussed in the background section. Raj et al. (cited in the rejection below) provide more comprehensive information on the mechanism of activation of an E2F responsive promoter, making it clear that E2F is fully activated in tumor cells which lack the Rb binding protein. Inherency of the basic mode of activation of an E2F responsive promoter is therefore demonstrated by the information provided in US 5,885,833 and Raj et al. that a malignant cell activates an E2F responsive promoter, where a normal cell only activates an E2F responsive promoter at specific stages of cell division.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. Claims 15-23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No. 5,885,833 in view of Raj et al. and WO 94/18992.

The claims are drawn to a method of selectively expressing a gene in a malignant cell of a tumor (glioma) with a viral vector (adenovirus or herpes virus) which comprised an E2F responsive promoter element (DHFR, Pol alpha, BMyb, cMyc or E2F) which controls expression of a structural gene (a positive or negative potentiator) which may be a TK gene, a cytotoxin (a suicide gene) or a cytokine.

US Pat No. 5,885,833 taught the invention as described in the rejection of the claims under 35 USC 102 above.

US Pat No. 5,885,833 did not teach the tumor was a glioma, nor the adenovirus or herpes virus vector.

Raj et al. taught (see especially the abstract and introduction) the use of an E2F responsive promoter to control expression of a structural gene in a glioma.

WO 94/18922 (see especially pages 4, 5 and 27) taught the desirable and advantageous use of an adenoviral vector for the expression of structural genes such as the TK gene or suicide genes in a malignant cell using an E2F responsive promoter.

It would have been obvious to one of ordinary skill in the art at the time of filing of the instant application to combine the teachings of US 5,885,833 with Raj et al. and WO 94/18992 because each of US 5,885,833, Raj et al. and WO 94/18992 taught the use of an E2F responsive promoter to express a structural gene in a malignant cell, where the malignant cell of Raj et al. was a glioma cell and WO 94/18992 taught the desirable and useful transduction and subsequent expression of a structural gene in a malignant cell with an adenoviral vector.

One of ordinary skill in the art would have been motivated to combine the teachings of US 5,885,833 with Raj et al. and WO 94/18992 because Raj et al. taught that an E2F responsive promoter was particularly useful in a method of expressing a desired gene in a glial cell tumor using an E2F responsive promoter, and because WO 94/18992 taught that adenoviral vectors were particularly useful in expression of genes such as the TK gene for diagnosis and therapy of neoplastic diseases in a selective method of expression. Further, a person of ordinary skill in the art would have had a reasonable expectation of success in the producing the instant claimed invention given the teachings of US 5,885,833, Raj et al. and WO 94/18992

20. Claims 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,885,833, Raj et al. and WO 94/18992 as applied to claims 15-23 and 25-27 above, and further in view of US 5,994,134.

The claims are drawn to the invention as described above and also where the cytotoxin is *Pseudomonas* exotoxin A.

US 5,885,833, Raj et al. and WO 94/18992 taught the invention as described above.

US 5,885,833, Raj et al. and WO 94/18992 did not teach that the cytotoxin was *Pseudomonas* exotoxin A.

US 5,994,134 taught (see especially columns 3, 4 and 6) cytotoxins such as *Pseudomonas* exotoxin A which are well known and used in methods of expression of an adenoviral or herpes viral vector in a malignant cell where selectively activated promoters are used.

It would have been obvious to one of ordinary skill in the art at the time of filing of the instant application to combine the teachings of US 5,885,833, Raj et al. and WO 94/18992 with US 5,994,134 because each of US 5,885,833, Raj et al., WO 94/18992 and US 5,994,134 taught the use of a promoter with selective activity to express a structural gene in a malignant cell. US 5,994,134 taught the well known cytotoxin *Pseudomonas* exotoxin A in a method of selective expression of the cytotoxin *Pseudomonas* exotoxin A in a tumor cell from an adenoviral or herpes viral vector.

One of ordinary skill in the art would have been motivated to combine the teachings of US 5,885,833, Raj et al., WO 94/18992 and US 5,994,134 because US 5,994,134 describes the

desirable and advantageous use of viral vectors to selectively transduce and express *Pseudomonas* exotoxin A in a malignant cell. Further, a person of ordinary skill in the art would have had a reasonable expectation of success in the producing the instant claimed invention given the teachings of US 5,885,833, Raj et al., WO 94/18992 and US 5,994,134.

Conclusion

21. Certain papers related to this application are ***welcomed*** to be submitted to Art Unit 1636 by facsimile transmission. The FAX numbers are (703) 308-4242 and 305-3014. The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 CFR 1.6(d)). NOTE: If applicant *does* submit a paper by FAX, the original copy should be retained by the applicant or applicant's representative, and the FAX receipt from your FAX machine is proof of delivery. NO DUPLICATE COPIES SHOULD BE SUBMITTED, so as to avoid the processing of duplicate papers in the Office.

Any inquiry concerning this communication or earlier communications should be directed to Dr. William Sandals whose telephone number is (703) 305-1982. The examiner normally can be reached Monday through Friday from 8:30 AM to 5:00 PM, EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached at (703) 305-1998.

Any inquiry of a general nature or relating to the status of this application should be directed to the Zeta Adams, whose telephone number is (703) 305-3291.

William Sandals, Ph.D.
Examiner
February 15, 2002

TERRY MCKELVEY
PRIMARY EXAMINER

09/269327
Att #16

=> s e2f

L1 6900 E2F

=> s promoter
L2 375018 PROMOTER

=> s pseudomonas(n)exotoxin
L3 3214 PSEUDOMONAS(N) EXOTOXIN

=> s l1 and l3
L4 1 L1 AND L3

=> d l4 ibib abs 1

L4 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:210873 HCAPLUS
DOCUMENT NUMBER: 128:253790
TITLE: Gene targeting in malignant cells using an ***E2F*** -responsive promoter
INVENTOR(S): Fine, Howard A.; Kaelin, William, Jr.
PATENT ASSIGNEE(S): Dana-Farber Cancer Institute, USA; Fine, Howard A.; Kaelin, William, Jr.
SOURCE: PCT Int. Appl., 55 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9813508	A1	19980402	WO 1997-US17143	19970924
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9745926	A1	19980417	AU 1997-45926	19970924

PRIORITY APPLN. INFO.: US 1996-26959 19960924
WO 1997-US17143 19970924

AB A method of selectively expressing a gene in a malignant as opposed to a non-malignant cell is taught. This permits one to selectively express proteins that would be deleterious to normal cells with minimal harm. The method involves the use of a nucleic acid cassette having an ***E2F*** -responsive promoter operably linked to a gene of interest, which encodes either a pos. or neg. potentiator such as antibodies, dominant neg. mutants, suicide genes, antisense RNA, ribozymes and cytotoxic agents. The method is useful for treating solid tumors, preferably breast, kidney, liver, brain (e.g. gliomas), and colon cancers or leukemia. The method is exemplified by constructing an expression cassette contg. the ***E2F*** -responsive promoter and encoding the domain III of ***Pseudomonas*** ***exotoxin*** A or the herpesvirus thymidine kinase.

09/269321
A 11 #16

1. Document ID: US 20020019050 A1

L3: Entry 1 of 76

File: PGPB

Feb 14, 2002

DOCUMENT-IDENTIFIER: US 20020019050 A1
TITLE: Compositions and methods for helper-free production of recombinant adeno-associated viruses

Detail Description Paragraph (22):
[0037] Still other useful gene products include any one of the receptors for the hormones, growth factors, cytokines, lymphokines, regulatory proteins and immune system proteins. The invention encompasses receptors for cholesterol regulation, including the LDL receptor, HDL receptor, VLDL receptor, and the scavenger receptor. The invention also encompasses gene products such as steroid hormone receptor superfamily including glucocorticoid receptors and estrogen receptors, Vitamin D receptors and other nuclear receptors. In addition, useful gene products include transcription factors such as jun, fos, max, mad, serum response factor (SRF), AP-1, AP-2, myb, MRG1, CREM, A1.times.4, FREAC1, NF-.kappa.B, members of the leucine zipper family, C2H4 zinc finger proteins, including Zif268, EGR1, EGR2, C6 zinc finger proteins, including the glucocorticoid and estrogen receptors, POU domain proteins, exemplified by Pit 1, homeodomain proteins, including HOX-1, basic helix-loop-helix proteins, including myc, MyoD and myogenin, ETS-box containing proteins, TFE3, E2F, ATF1, ATF2, ATF3, ATF4, ZF5, NFAT, CREB, HNF-4, C/EBP, SP1, CCAAT-box binding proteins, interferon regulation factor 1 (IRF-1), Wilms tumor protein, ETS-binding protein, STAT, GATA-box binding proteins, e.g., GATA-3, and the forkhead family of winged helix proteins.

2. Document ID: US 20010053352 A1

L3: Entry 2 of 76

File: PGPB

Dec 20, 2001

DOCUMENT-IDENTIFIER: US 20010053352 A1
TITLE: ADENOVIRUS VECTORS CONTAINING CELL STATUS-SPECIFIC RESPONSE ELEMENTS AND METHODS OF USE THEREOF

Detail Description Paragraph (44):
[0087] An example of a cell status is cell cycle. An exemplary gene whose expression is associated with cell cycle is E2F-1, a ubiquitously expressed, growth-regulated gene, which exhibits peak transcriptional activity in S phase. Johnson et al. (1994) Genes Dev. 8:1514-1525. The RB protein, as well as other members of the RB family, form specific complexes with E2F-1, thereby inhibiting its ability to activate transcription. Thus, E2F-1-responsive promoters are down-regulated by RB. Many tumor cells have disrupted RB function, which can lead to de-repression of E2F-1-responsive promoters, and, in turn, de-regulated cell division.

3. Document ID: US 20010047081 A1

L3: Entry 3 of 76

File: PGPB

Nov 29, 2001

DOCUMENT-IDENTIFIER: US 20010047081 A1
TITLE: Adenoviral capsid containing chimeric protein IX

Detail Description Paragraph (17):
[0023] For use as a genetic vector, the adenoviral genome includes at least one non-native nucleic acid for transcription, which is operably linked to a promoter. Where the inventive adenoviral vector includes a non-native nucleic acid and a non-adenoviral ligand in its capsid, the non-native nucleic acid can be operably linked to any suitable promoter, such as a promoter native to the adenoviral genome or a non-adenoviral promoter. Where the ligand is employed to deliver the vector to a desired cell type, preferably the non-adenoviral promoter is active within the cell type, and, more preferably, the non-adenoviral promoter is a tissue-specific promoter (e.g., specific for the cell type to which the ligand binds), such as those cell types discussed above. For example, expression in targeted endothelial cells can be mediated using the E-selectin promoter (see, e.g., Whelan et al., TIBS, 21, 65-69 (1996)); passenger gene expression in targeted prostate cancer cells can be mediated using the PSA promoter (see, e.g., Schuur et al., J. Cell Biol., 271, 7043 (1996), Pang et al., Cancer Res., 57, 495 (1997)) or the E2F promoter. Furthermore, the promoter can be that controlling a gene encoding a tissue-specific receptor, such as those receptors mentioned herein. Still other tissue specific promoter systems are known in the art. Alternatively, the non-native amino acid can be placed under control of a regulable promoter (e.g., metallothionin promoter, tetracycline-responsive promoter, RU486-responsive promoter, etc.).

4. Document ID: US 20010022988 A1

L3: Entry 4 of 76

File: PGPB

Sep 20, 2001

DOCUMENT-IDENTIFIER: US 20010022988 A1
TITLE: Device and method for protecting medical devices during a coating process

Detail Description Paragraph (7):
[0029] Polynucleotide sequences useful in practice of the invention include DNA or RNA sequences having a therapeutic effect after being taken up by a cell. Examples of therapeutic polynucleotides include anti-sense DNA and RNA; DNA coding for an anti-sense RNA; or DNA coding for tRNA or rRNA to replace defective or deficient endogenous molecules. The polynucleotides of the invention can also code for therapeutic proteins or polypeptides. A polypeptide is understood to be any translation product of a polynucleotide regardless of size, and whether glycosylated or not. Therapeutic proteins and polypeptides include as a primary example, those proteins or polypeptides that can compensate for defective or deficient species in an animal, or those that act through toxic effects to limit or remove harmful cells from the body. In addition, the polypeptides or proteins that can be incorporated into the polymer coating, or whose DNA can be incorporated, include without limitation, angiogenic factors and other molecules competent to induce angiogenesis, including acidic and basic